

mussel-culture, besides indicating the importance of such organisms in regard to the nourishment of young food-fishes. The increase of mussels on the rocks at the exit of the main sewage-pipe of the city is also a feature of moment which will subsequently be examined.

MISCELLANEOUS.

On the Development of the Chelifers. By J. BARROIS.

THE development of the Chelifers differs from that of the other Arachnida by the existence of a larval state which is still but little known, and which Metschnikoff has described as presenting—(1) externally a muscular lip, two pairs of limbs, and a rudimentary abdomen; and (2) internally a mass of nutritive vitellus. My researches have led me to recognize a more complex structure.

The number of pairs of limbs is really five. All the future pairs already exist except the first, but they are completely unfit for locomotion, and consist only of simple projections of the ectoderm.

The nutritive vitellus is surrounded by a layer of large ectodermal cells and preceded by a voluminous suctorial apparatus formed by two adpressed chitinous plates, which separate from each other under the action of a powerful muscular mass placed in front (the muscular lip of Metschnikoff). This suctorial apparatus opens on the ventral surface between the two large chelæ (second pair) by a buccal orifice furnished with a pair of peculiar glands, and very different from the definitive mouth. All this constitutes a digestive apparatus ready to function in the mature larva, and which actually functions in passing the nutritive liquids derived from the maternal organism into the interior of the larva. The latter is therefore a true parasitic organism which lives at the expense of its mother, upon the ventral surface of which it is fixed.

Later on this suctorial apparatus is destined to be cast off. The mode in which it is got rid of constitutes one of the most characteristic features of the development.

In the Chelifers the nervous groove, instead of forming a single continuous band, from the head to the tail, as in the other Arthropoda, consists of two separate bands, one placed in front of, and the other behind, the suctorial organ. Subsequently these bands grow together, passing to meet one another above the suctorial apparatus, which they thus completely surround, pressing it downwards; they thus gradually exclude it from the body of the embryo. When the two bands are finally united into a single continuous band the suctorial apparatus is pushed entirely outside; at last it is attached to the embryo only by a slender cord inserted below the definitive mouth, and falls off at the same time as the larval envelope.—*Comptes Rendus*, December 15, 1884, p. 1082.